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EXAMINER				
LEUNG, JENNIFER A				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/571,221

Applicant(s)

FILIPPI ET AL.

Examiner

JENNIFER A. LEUNG

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/ISD)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____
- Paper No(s)/Mail Date 4/19/07/3/9/06

DETAILED ACTION

Claim Objections

1. Claims 1 and 2 are objected to because of the following informalities:

In claim 1, line 1: "Axial" should be changed to --An axial--.

In claim 1, line 10: "characterized in that" should be changed to --wherein--.

In claim 2, line 1: "Chemical" should be changed to --The chemical--.

In claim 2, lines 1-2: "characterized in that" should be changed to --wherein--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muenger (US 3,666,423) in view of Vu et al. (US 5,030,789).

Muenger (see FIGs. 1-7; column 4, line 4 to column 5, line 25) discloses a chemical

reactor (11) *comprising* a substantially cylindrical shell (12), closed at the opposite ends by an upper bottom (13) and a lower bottom (14), a reaction zone defined in said shell (12), including a catalytic bed (see column 5, lines 41-47) and supporting a *plurality* of heat exchangers (i.e., specifically, the two diametrically opposite heat exchanger elements 42 that are located in parallel planes equidistant from the central vertical axis; see, e.g., FIGs. 2, 3); said heat exchangers being plates of parallelepiped shape and having vertical long sides and short sides parallel to a same diameter of the shell (see FIGs. 2, 3, 5). The two heat exchanger elements (42) are identical; their short sides have ends arranged on the same imaginary cylindrical surfaces having the same radius as the inner radius of the shell (12); their centers are arranged on a same diameter of the shell (12); and the heat exchangers centrally define an axial passage (see FIGs. 2, 3). The sizing of the axial passage to enable personnel access, e.g., to allow for repair, cleaning, maintenance, etc., would have been considered routine for one of ordinary skill in the art.

The apparatus of Muenger is the same as the claimed apparatus, except that Muenger does not specifically disclose flat, boxed, plate-shaped parallelepiped heat exchangers.

Vu et al. teaches a conventional heat exchanger comprising a plurality of flat, boxed, plate-shaped parallelepiped heat exchangers (see FIGs. 1, 2 and 4A-4C; column 4, lines 42-45; column 8, lines 47-65).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute the flat, boxed, plate-shaped heat exchangers of Vu et al. for the heat exchangers (42) in the apparatus of Muenger, for the reason of the various advantages described by Vu et al. (see, e.g., column 2, lines 22-29). Furthermore, the substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re*

Susi 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958), and when the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result, *KSR International Co. v. Teleflex Inc.*, 550 U.S. --, 82 USPQ2d 1385 (2007).

3. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider (US 3,156,538) in view of Vu et al. (US 5,030,789).

Schneider (see FIGs. 1-3; column 3, line 27 to column 5, line 44) discloses a chemical reactor *comprising* a substantially cylindrical shell (10), closed at the opposite ends by upper and lower bottoms, a reaction zone defined in said shell (10), including a catalytic bed (C) and supporting a *plurality* of heat exchangers (i.e., specifically, the two diametrically opposite heat exchanger elements 18, located in parallel planes equidistant from the central vertical axis; see, e.g., FIG. 1); said heat exchangers (18) having vertical long sides and short sides parallel to a same diameter of the shell (see FIGs. 1-3). The two diametrically opposite heat exchangers (18) are identical; their short sides have ends arranged on the same imaginary cylindrical surfaces having the same radius as the inner radius of the shell (10); their centers are on a same diameter of the shell (10); and the heat exchangers (18) centrally define an axial passage (see FIGs. 1, 2). The sizing of the axial passage to enable personnel access, e.g., to allow for repair, cleaning, maintenance, etc., would have been considered routine for one of ordinary skill in the art. (see also, column 6, lines 23-31, for the suggestion of access into the reactor via manways).

The apparatus of Schneider is the same as the claimed apparatus, except that Schneider does not specifically disclose flat, boxed, plate-shaped parallelepiped heat exchangers.

Vu et al. teaches a conventional heat exchanger comprising a plurality of flat, boxed,

plate-shaped parallelepiped heat exchangers (see FIGs. 1, 2 and 4A-4C; column 4, lines 42-45; column 8, lines 47-65).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute the flat, boxed, plate-shaped heat exchangers of Vu et al. for the heat exchangers (18) in the apparatus of Schneider, for the reason of the various advantages described by Vu et al. (see, e.g., column 2, lines 22-29). Furthermore, the substitution of known equivalent structures involves only ordinary skill in the art, and when the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the

scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1 and 2 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No. 10/566,120 (PG-PUB US 2006/0275190) in view of Vu et al. (US 5,030,789).

This is a provisional obviousness-type double patenting rejection.

Application No. 10/566,120 similarly claims an axial pseudo-isothermal chemical reactor comprising a substantially cylindrical shell, said shell defining a reaction zone for conducting a heterogeneous chemical reaction and containing a plurality of coil heat exchangers (see claim 1). The heat exchangers are arranged within the substantially cylindrical shell according to the instantly claimed configuration (see claims 10-12, which define the arrangement illustrated in FIG. 7. The figure is identical to FIG. 4 of the instant application).

Application No. 10/566,120, however, fails to claim a plurality of flat, boxed, plate-shaped heat exchangers, having the shape of a parallelepiped with vertical long sides.

Vu et al. teaches a conventional heat exchanger comprising flat, boxed, plate-shaped heat exchangers, having the shape of a parallelepiped with vertical long sides (see FIGs. 1, 2 and 4A-4C; column 4, lines 42-45; column 8, lines 47-65).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute the flat, boxed, plate-shaped heat exchangers of Vu et al. for the coil heat exchangers in Application No. 10/566,120, for the reason of the various advantages described by Vu et al. (see, e.g., column 2, lines 22-29). Furthermore, the substitution of known equivalent

structures involves only ordinary skill in the art, and when the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. LEUNG whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A. Leung/
Primary Examiner, Art Unit 1797